State of California
AIR RESOURCES BOARD

Small Off-Road Engine Evaporative Emission System Components

Executive Order Q-12-007

Ticona Engineering Polymers
Innovative Products

WHEREAS, Pursuant to California Health and Safety Code (CH&SC), sections 39600, 39601, and 43013, the California Air Resources Board (ARB) has established a certification process for evaporative emission system components designed to control gasoline emissions from small off-road engines, as described in California Code of Regulations (CCR), title 13, section 2767.1;

WHEREAS, Pursuant to CH&SC, section 43013, ARB has established criteria and test procedures for determining the compliance of evaporative emission system components with the design requirements in CCR, title 13, section 2754;

WHEREAS, Pursuant to CCR, title 13, section 2767.1, ARB Executive Officer may issue an executive order if he determines that the small off-road engine evaporative emission system component or innovative product conforms to the applicable performance requirements set forth in CCR, title 13, section 2754 and 2755;

WHEREAS, Pursuant to CH&SC, sections 39515 and 39516, ARB Executive Officer issued Executive Order G-05-008 delegating to the Chief of ARB Monitoring and Laboratory Division (MLD) the authority to certify small off-road engine evaporative system components and innovative products; and

WHEREAS, On December 7, 2011, Ticona Engineering Polymers submitted an application for certification as innovative products under CCR, title 13, section 2767(c) for Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks.

NOW, THEREFORE, I, Alberto Ayala, Chief of MLD, find that fuel tanks produced using Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resin materials and following the process and material specifications set out in Attachment A constitute innovative fuel tanks pursuant to CCR, title 13, section 2767(c). Fuel tanks produced following Ticona Engineering Polymers process and material specifications are hereby deemed equivalent to those tanks listed in CCR, title 13, section 2752(a)(5). This finding is based on Ticona Engineering Polymers demonstration that such fuel tanks have a permeation rate substantially lower than 1.5 grams per square meter per day set forth in CCR, title 13, section 2754, when tested at a constant temperature of 40° C pursuant to test procedure TP-901 using an approved test fuel of Phase II California Reformulated Certification Fuel.

IT IS ORDERED AND RESOLVED that no tank permeation data is required to be submitted in the certification process for equipment using the Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks.

IT IS ORDERED AND RESOLVED that all fuel tanks made from Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins with minimum barrier and nominal wall thicknesses equal to or greater than the value listed in Table 1 incorporated herein, are certified for use in small off-road equipment.

Table 1
Specifications for Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black Resins for Fuel Tanks

Minimum barrier thickness (mm)	Nominal overall tank thickness (mm)
1.4	3.2

IT IS FURTHER ORDERED that Ticona Engineering Polymers shall provide a warranty to equipment manufacturers purchasing their Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks. The warranty must conform to the requirements of CCR, title 13, section 2760.

IT IS FURTHER ORDERED that the certified Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks shall be installed in accordance with the manufacturer's installation and use instructions for the tanks. A copy of this executive order and the fuel tanks' installation and use instructions shall be provided to manufacturers purchasing Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks for installation on small off-road engines and equipment introduced into commerce in California.

IT IS FURTHER ORDERED that Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks shall be clearly identified by a permanent identification that allows ARB to identify the manufacturer's name, executive order number, and model number.

IT IS FURTHER ORDERED that any modification of Ticona Engineering Polymers approved process and material specifications for producing Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks is prohibited. Any alteration or modification of the process or material specifications set out in Attachment A of this executive order will require the manufacturer to apply for a new executive order.

IT IS FURTHER ORDERED that the Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks shall be compatible with fuels in common use in California at the time of

certification and any modifications to comply with future California fuel requirements shall be approved in writing by the Executive Officer or Executive Officer's delegate.

IT IS FURTHER ORDERED that the innovative product certification of the Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks can be referenced in certification applications for small off-road engines and equipment that use small off-road engines unless the Executive Officer finds that the Ticona Engineering Polymers Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black resins for extrusion blow molded fuel tanks no longer meet the performance requirements set forth in CCR, title 13, section 2754, when tested pursuant to CCR, title 13, section 2765.

Executed at Sacramento, California, this 7th day of March 2012.

Alberto Ayala, Ph.D., M.S.E.
Chief, Monitoring and Laboratory Division

Attachment A

Ticona Engineering Polymers Hostaform® S 9364LPB Natural and 14 Black Resin Fuel Tank Manufacturing Specification

1.0 Overall Material Specification

Material Manufacturer:	Ticona
Material Distributor:	Ticona
Material Composition / Description:	Single Layer Impact Modified Polyacetal (HOSTAFORM S 9364LPB)
Material Name(s):	Hostaform® S 9364LPB Natural Hostaform® S 9364LPB 14 Black
Barrier Material:	Impact modified polyacetal polymer
Blend ratio to manufacture tanks	NA
Color(s):	Natural, Black
Maximum Re-grind Usage:	70%

2.0 Tank Design

Nominal Overall Tank Thickness:	3.2 mm
Minimum Barrier Thickness:	1.4 mm

3.0 Blow Molding Process

3.1. Hostaform® S 9364LPB Natural or Hostaform® S 9364LPB 14 Black is placed in the feeder of the blow molding machine.

3.2. The material is melted and then extruded into a parison (similar to a balloon).

3.3. Two halves of a metal mold, with the shape of the desired container etched into the matching halves, close around the parison.

3.4. Air pressure in the parison forces the walls of the parison onto the cavity of the mold to form the container.

3.5. Once the resin has solidified, the mold opens and the container is then ejected from the mold.

4.0 Normal Processing Conditions for Hostaform® S 9364LPB Natural and Hostaform® S 9364LPB 14 Black

Web Processing Pre-drying	Value Unit	Test Standard
Pre-drying	**Drying is not normally required. If material has come in contact with moisture through improper storage or handling, or through re-grind use, drying to prevent splay and odor problems.**	
Drying time	4 h	
Drying temperature min	80 °C	
Drying temperature max	90 °C	
Web Processing Temperature	**Value Unit**	**Test Standard**
Zone 1 temperature min	170 °C	
Zone 1 temperature max	196 °C	
Zone 2 temperature min	180 °C	
Zone 2 temperature max	200 °C	
Zone 3 temperature min	180 °C	
Zone 3 temperature max	200 °C	
Zone 4 temperature min	180 °C	
Zone 4 temperature max	200 °C	
Adaptor temperature min	180 °C	
Adaptor temperature max	200 °C	
Die head temperature min	180 °C	
Die head temperature max	200 °C	
Melt temperature min	180 °C	
Melt temperature max	200 °C	
Web Processing Pressure	**Value Unit**	**Test Standard**
Mold temperature min	10 °C	
Mold temperature max	90 °C	
Blow air pressure min	70 psi	
Blow air pressure max	120 psi	
Web Processing Speed	**Value Unit**	**Test Standard**
Shot speed	Fast	
Web Processing Special Info	**Value Unit**	**Test Standard**
Special information (English)	**Do not heat over 205 °C (~400 F) to avoid burning and discoloring product**	